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Health informatics in Australia

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Health Informatics is defined as “an evolving scientific discipline that deals with the collection, storage, retrieval, communication and optimal use of health related data, information and knowledge. The discipline utilises the methods and technologies of the information sciences for the purposes of problem solving, decision making and assuring highest quality health care in all basic and applied areas of the biomedical sciences” (Graham 1994).

This text was compiled primarily for health professionals who now require knowledge about how these new technologies may be used to enhance theior practice. It aims to provide an overview of the health informatics discipline. The contents reflect what we consider are the basics for continuing education purposes and for inclusion into any curriculum which prepares the student for practice in any of the health professional disciplines. It is suitable for use as a basic text in both undergraduate and post graduate curricula. Each chapter can be expanded upon as required.

This text is not all inclusive or exhaustive; most of the chapters could be expanded individually into a book on its own. The field of health informatics is very extensive. For example at the seventh world congress on medical informatics held in Geneva in 1992, over 400 papers were presented and classified into any one of 48 different topics covering all aspects of the technology and many different applications by a vast array of health professionals in all types of health care related settings, including clinical, management, administrative, policy and research based in community and institutional settings.

The text has deliberately avoided a focus on any one of the health professions. This is because of the trend towards integrated systems and the use of a ‘professional’ or ‘clinician’ workstation’ to reflect the use of patient focused systems in place of discipline specific or departmental systems. These new workstations need to support both independent dsicipline specific tasks and interdependent interactions with the system by multiple disciplines. Clinical data from multiple sources are integrated and displayed to support multiple types of clinical decision making. This also has implications for the language or terminology used and may well influence changes in how individuals practice their profession.

The application of cutting edge technologies pertaining to the computer, communication and information sciences has much to offer the health sciences. We are of the view that appropriate use of these technologies will result in improved health, lower costs and

improved service delivery methods. To achieve this health professionals need to be aware of the possibilities today and in the future and participate in this discipline's further development.

About 25 years ago Martin and Norman (1970 p.222) predicted that in medicine the computer promised revolutionary changes. Today the same may be said about communications technology. There is a convergence between communications, computing and television or broadcasting technologies enabling the merging of all types of data into integrated multimedia information, providing rapid interactions between persons from any location. The speed by which these changes will impact upon health service delivery is determined by and dependent upon how quickly the health professions accept the role of these new technologies. It is they who need to identify the potential use of these new technologies within the health care industry. The international network of health informaticians is growing rapidly. There is evidence of an approaching critical number such that the process of change is now self sustaining. This network could be compared with what Marilyn Ferguson describes as an Aquarian conspiracy where conspirators (read health informaticians) collude to change social institutions, modes of problem solving and distribution of power (Ferguson 1980 p.20). They are characterised by rethinking everything, examining old assumptions, by looking differently at their work, relationships, health, political power, experts, goals and values. They are leading the way towards a paradigm shift; they have a new perspective towards health care. Ferguson (1980 p. 28) notes that:

> "New paradigms are nearly always received with coolness, even mockery and hostility. Their discoveries are attacked for their heresy. (For historic examples, consider Copernicus, Galileo, Pasteur, Mesmer). The idea may appear bizarre, even fuzzy, at first because the discoverer made an intuitive leap and does not have all the data in place yet."

Many health informatics network members can no doubt identify with these sentiments. This book is dedicated to these pioneers who dared to be out of step with their peers and who have provided the building blocks for this paradigm shift. It has proved difficult for the discipline to gain acceptance from mainstream health professionals and recipients of health care. Also enabling procedures and legislations have been slow to emerge (Mandil 1992 p.xxxiv).

In Australia the health informatics network is made up of a number of discipline, focus or geographically based health informatics groups brought together under the Health Informatics Society of Australia (HISA). HISA is a special interest group of the Australian Computer Society and is a member of, and the official Australian representative to the International Medical Informatics Association.

Health informatics is about data, information and knowledge and what we do with all this as health professionals. It is no accident that the advent of low cost easily accessible computer technology has occurred at the same time as the so-called information explosion that has affected all areas of modern life. The problem of managing the ever increasing volume of information and developing methods to help keep abreast of important changes in knowledge is particularly applicable to those of us working in health care.

It is becoming increasingly difficult to practice as a health professional without the use of information technologies. This challenge is going to continue as expectations of increasing

quality of health care is demanded by the consumers of our services. Improved information management of health care data has become an accepted essential element of the infrastructure of all health care systems (Dick 1991 p.2)

The discipline of health informatics has arisen from the fairly recently established science of medical informatics (Shortliffe et al 1990, Hannan 1991, Coiera 1994). It is noted that the first world congress on medical informatics was held in 1974 in Stockholm. Although the two disciplines share many concepts, and the terms are often interchangeable, in this textbook we have chosen to focus on the use of information technology in all areas of health care, rather than just focus on a more traditional view of medicine. The term health informatics is all embracing and medical informatics could be viewed as a subset of health informatics along with nursing or dental informatics.

Those of you who have had little past experience in the use of computers may be reticent about approaching this text. Information technology can be a daunting challenge for those of us who missed out on being part of the 'computer generation' currently graduating from our high schools and tertiary institutions. Remember that you don't need to be a computer genius to use a computer effectively in your professional life. You just need to understand the basic concepts. It's like driving a car; you don't need to know exactly how the engine works but you do need to learn how to drive the machine, to identify when something is wrong and to understand the road rules so that you minimise the risk of getting into trouble.

If you are already computer literate, you can enjoy applying your acquired skills to the health sciences and learn how to use information technology in the provision of high quality health care. The computer age poses real challenges for us all. We hope that you find this text useful in assisting you to meet the challenges ahead.

The book is divided into five sections, an overview of the discipline, basic informatics concepts, the application of health informatics in clinical practice, management and research. We first present the history of computing in health and outline some of the basic principles underlying this emerging health discipline, including the need to balance the technology with our underlying commitment to patient care. We then discuss the basic concepts which need to be grasped about computing and explain how these apply to the health professions. The latter three sections demonstrate how these new technologies can assist in your daily work, in clinical practice, management, education and research. The difference between information systems specialists and health information systems specialists is that the latter place a greater emphasis on the application of the technology in health care. They focus on solving very complex medical or health related problems using the information technology to the fullest extent as the tool to achieve that. This often means a change in work practices. Guidelines for health informatics education are provided in the final chapter.

References

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